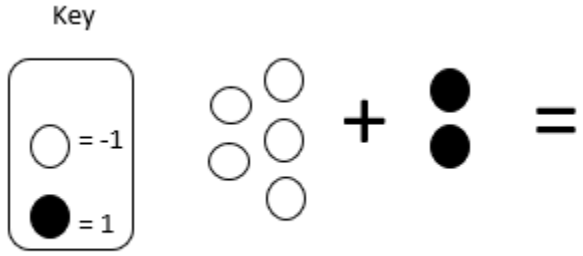
Just In Time Quick Check

Standard of Learning (SOL) 6.6a

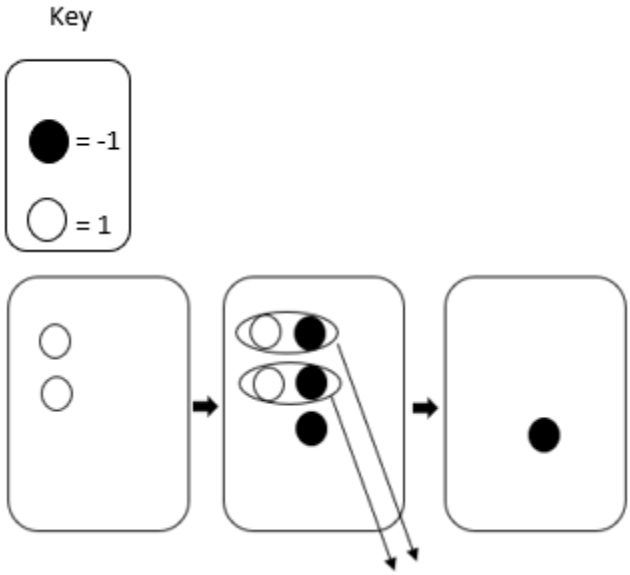
Strand: Computation and Estimation
Standard of Learning (SOL) 6.6a ***The student will add, subtract, multiply, and divide integers***
Grade Level Skills: ● Model addition, subtraction, multiplication and division of integers using pictorial representations or concrete manipulatives. ● Add, subtract, multiply, and divide two integers.
Just in Time Quick Check
Just in Time Quick Check Teacher Notes
Supporting Resources: ● VDOE Mathematics Instructional Plans (MIPS) ○ Operations with Integers (Word) / PDF ● VDOE Co-Teaching Mathematics Instruction Plans (MIPS) ● VDOE Algebra Readiness Formative Assessments ○ 6.6a (Word) / PDF ● VDOE Algebra Readiness Remediation Plans ○ Operations with Integers Addition- (Word) / PDF ○ Operations with Integers Division- (Word) / PDF ○ Operations with Integers Multiplication- (Word) / PDF ○ Operations with Integers Subtraction- (Word) / PDF ● VDOE Word Wall Cards: Grade 6 (Word) / PDF ○ Integer Operations- Addition and Subtraction ○ Integer Operations- Model Addition and Subtraction ○ Integer Operation- Multiplication and Division ● Desmos Activity ○ Adding Integers
Supporting and Prerequisite SOL: 6.3a, 5.4, 4.4a

SOL 6.6a - Just in Time Quick Check

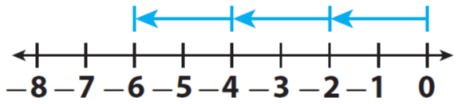
1. Use the key to write an equation that represents the model. Then solve.



2. Use the key to write an equation that represents the model.



3. Write the equation modeled. Explain your reasoning.



4. Simplify each expression.

a. (-4) - 12

b. The product of -6 and 4

c. $\frac{-54}{-9}$

d. (-6) + (-8)

5. Model this expression using a number line or integer chips. Then simplify the expression.

(-6) + 4

6. Choose each number from the table that, when placed in the blank, will result in a negative answer.

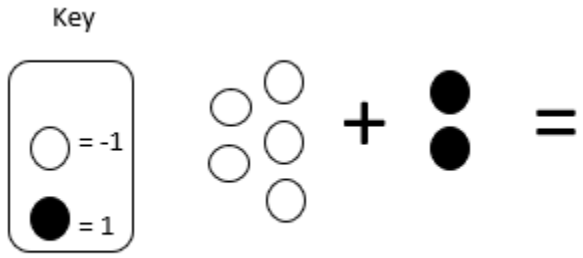
-8+_____

-9	9	6
-14	12	8

SOL 6.6a - Just in Time Quick Check Teacher Notes

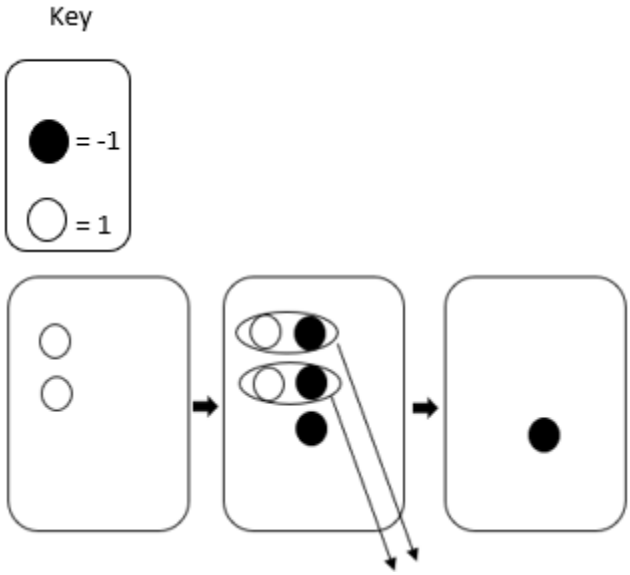
Common Errors/Misconceptions and their Possible Indications

1. Use the key to write an equation that represents the model. Then solve.



One common mistake that students may make is ignoring the color of the chips and achieving an answer of 7. This may indicate that the student has not had enough exposure to modeling integer operations using integer chips. Engage the student in hands-on practice utilizing integer chips (or virtual integer chips) to conceptualize what it means to add a positive number to a positive number, a positive number to a negative number, and a negative number to a negative number. Hands-on practice will also assist the students in conceptualizing the idea of zero pairs.

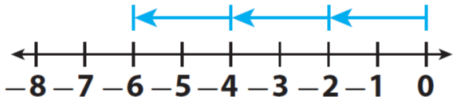
2. Use the key to write an equation that represents the model.



This model is a little different than the first model because it shows moves being done to the integer chips. The arrows between cells let students know the order of the progression. Often students have a hard time following the question by just looking at it as a whole picture, so they need time to look for changes from one cell to the next. The action of adding three positives in the second cell can also sometimes be a struggle. Some models show the move separately, and the following cell has chips removed. Encourage students to describe the changes they see from one cell to the next.

As students begin exploring with integer chips, encourage them to draw a picture for every action they do with the chips to assist them with understanding similar models.

3. Write the equation modeled. Explain your reasoning.



This model could represent a multiplication or a division equation. The student's explanation should support which operation they chose.

A common error that students make is to represent this model as -2 x -3 = -6 or -6 ÷ -2 = -3. This may indicate that the students assume that since all movement is on the negative side of the number line, all the factors will be negative. Another common mistake is to see the model as 2 (-3) = -6 or -6 ÷2 = -3. Helping students see this as "three groups of negative two" and not "two groups of negative three" will help them understand why the three needs to be positive in either equation.

4. Simplify each expression.

a. (-4) – 12

b. The product of -6 and 4

.

c. $\frac{-54}{-9}$

d. (-6) + (-8)

Students often struggle with integer operations. Sixth grade is the first year they encounter negative numbers: identifying, ordering and comparing, as well as operations. One common error students make when using a number line is to move in the wrong direction when completing addition and subtraction. If students are making this error, it may be helpful to connect the new information to student prior knowledge. They have always added positives and the result was a bigger number (move to the right). They have always subtracted positives and the result was a smaller number (move to the left). Helping them understand that adding a negative will have the opposite result will help some students understand the concept of getting a smaller answer. Similarly, subtracting a negative number will result in a larger number.

Engaging students in hands-on experiences with integer chips also helps to ground their conceptual understanding. Thinking about what the operations actually mean (i.e. adding is combining, subtracting is taking away, multiplication and division deal with grouping) assist students in making connections between the models and the "rules."

5. Please model this question using a number line or integer chips. Solve.

(-6) + 4

Students who have difficulty with modeling this expression may not have had enough experiences with modeling with number lines and integer chips. Allow them many opportunities to model with both integer chips and number lines. Utilizing the Concrete-Representational-Abstract approach to teaching integer operations will assist students in making connections between the modeling and "rules."

6. Choose each number from the table that, when placed in the blank, will result in a negative answer.

-8+_____

-9	9	6
-14	12	8

Students may have a misconception that all the choices also have to be negative and only choose -9 and -14. This may indicate that the student needs more experiences with modeling with integer chips and number lines to understand that the sum of a negative and a positive could sometimes be negative.